

where

R = H or alkyl with 1-6 carbon atoms

$x + y = 1$

$y = 0.05 - 0.2$

$x = 0.8 - 0.95$ ; and

(b) a binder or [mixture] ~~mixture~~ of binders;

(c) wherein the quantity of said copolymer is between 10 to 75 weight % of the combined amount of said copolymer and binder and said layer provides the sheet with enhanced light fastness properties.

### REMARKS

Reconsideration of the final rejection contained in the Office Action of June 7, 2002 is respectfully requested.

All claims pending in the application, namely 3, 4 and 6-13, stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al or Kashiwazaki et al in view of Smigo et al. The Examiner's position remains that the recording medium of Kono and Kashiwazaki, as modified to include the copolymer disclosed by Smigo, would inherently have light fastness properties absent evidence to the contrary.

Applicant respectfully disagrees with the Examiner's position and conducted a telephone interview on August 8, 2002 to discuss the final rejection and pending claims. The Examiner stated she would reconsider the patentability of the claimed subject matter if Applicants provide objective evidence demonstrating superior/unexpected results of the claimed invention over the cited references. Applicant's herein provide such evidence.

The following experimental coatings of recording sheets for ink jet printing were made and tested. A support made of polyethylene coated paper of 175  $\mu\text{m}$  thickness (produced by Schoeller GmbH, Germany) was coated with a bar coater with solutions having the compositions given in Table 1 (parts per weight). The coated samples were dried at a temperature of 30° C for 30 minutes. The dried coatings had a thickness of 10  $\mu\text{m}$ .

Table 1

Component / Example	1	2	3	4
Polyvinyl Pyrrolidone PVP K-90	3	3	3	3
PVA-CM-318	10			
PVA-C-506		10		
PVAA			10	
Moviol 2688				10

Polyvinyl Pyrrolidone PVP K-90 is available from BASF.

The cationically modified product of polyvinyl alcohol PVA-CM-318 is available from Kuraray C., Ltd..

The cationically modified product of polyvinyl alcohol PVA-CM-506 is available from Kuraray C., Ltd..

PVAA is available from Air Products

Moviol 2688 (88 % hydrolyzed polyvinyl alcohol) is available from Clariant.

Coating 1 corresponds to Example 3 of Kono et al. (US 4,801,497); Coating 2 corresponds to Example 3 of Kono et al. (US 4,801,497) where Kono's copolymer has been replaced by Kashiwazaki's copolymer (US 5,747,146); Coating 3 corresponds to example 3 of Kono et al. (US 4,801,497) where Kono's copolymer has been replaced by Smigo's copolymer (US 5,281,307) - Smigo's copolymer is the same copolymer as claimed in our application for recording sheets for ink jet printing; and Coating 4 corresponds to example "Comparative Example 2" of Kono et al. (US 4,801,497).

The experimental recording sheets for ink jet printing were printed with an Epson SP 890 ink jet printer or a HP 970 ink jet printer using original inks. The printer used in the patent application IRIS 3024 with Ilfojet Galerie® inks could not be used anymore, as it is no longer available.

Printed sample sheets prepared as described above are measured on the X-rite® densitometer and exposed in an Atlas Weather-Ometer® with a 2500 W-Xenon lamp under conditions analogue to those set forth in ISO norm 10'977. The samples were exposed to a total illumination of either 10 or 20 Mluxh. This corresponds roughly to 20 kJ/cm<sup>2</sup> or 40 kJ/cm<sup>2</sup>. The results are reported in the following tables as an average % loss of the densities of the colors cyan, magenta, yellow, red, green, blue and black as determined by the difference of the readings before and after exposure.

**Table 2: Printer Epson SP 890; 10 Mluxh**

Sample No	Visual Loss in % of Initial Density
1	9.9
2	13.3
3	18.1
4	16.7

**Table 3: Printer Epson SP 890; 20 Mluxh**

Sample No	Visual Loss in % of Initial Density
1	16.0
2	19.8
3	19.8
4	22.9

The results in Tables 2 and 3 clearly indicate that Smigo's copolymer in Kono's layer (Example 3) has a lower light stability than either of Kono's original copolymers (Examples 1 and 2). The light stability of a layer containing Smigo's copolymer in Kono's layer (Example 3) is similar to the light stability of Comparison Example 2 of Kono not containing a cationically modified polyvinyl alcohol (Example 4).

**Table 4: Printer HP 970; 10 Mluxh**

Sample No	Visual Loss in % of Initial Density
1	17.5
2	14.5
3	18.3
4	20.3

**Table 5: Printer HP 970; 20 Mluxh**

Sample No	Visual Loss in % of Initial Density
1	21.2
2	18.1
3	24.6
4	23.5

The results in Tables 4 and 5 clearly indicate that Smigo's copolymer in Kono's layer (Example 3) has a lower light stability than either of Kono's original copolymers (Examples 1 and 2). The light stability of a layer containing Smigo's copolymer in Kono's layer (Example 3) is similar to the light stability of Comparative Example 2 of Kono not containing a cationically modified polyvinyl alcohol (Example 4).

The results of these supplementary experiments clearly indicate **that the recording medium of Kono, as modified to include the copolymer disclosed by Smigo in Kono's ink-receptive layer, do not inherently have enhanced light fastness properties.** In fact, the recording medium of the invention provides enhanced light fastness properties as illustrated in Applicant's specification where the loss in % of initial density is less than 6%, typically less than 3% (see samples 2-4, Table 3; and samples 7,8, Table 6). Accordingly, the present invention as defined in the claims is not obvious over the cited references either alone, or in combination. It is believed that the Examiner's rejections have been overcome and should be withdrawn.

Finally, the pending claims were also rejected as being indefinite because the scope of the "light fastness properties" is not clear. Applicant addressed this rejection in the previous response by directing Examiner's attention to support in the specification and examples. In any event, it is believed that the data submitted herein clearly demonstrates that the invention sheets have enhanced light fastness properties and that the indefiniteness rejection is now moot.

Applicant encloses herewith a clean version of the amended and pending claims according to 37 CFR 1.121(c)(1)(i).

In view of the foregoing, Applicant submits that this application is now in condition for allowance. No new matter has been introduced by this Amendment. Reconsideration of this application and allowance of Claims 3, 4 and 6-13 are hereby requested. If a telephone interview would be useful to advance this case, then the Examiner is invited to telephone the undersigned.